Mandibular AV Malformation: A Rare Cause of Massive Bleeding from Mouth Managed with Multiple Vessel Embolization

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Abstract

An arteriovenous malformation (AVM) is a site of abnormal connectivity between arteries and veins. Arteriovenous malformations of jaw are extremely rare conditions that can result in disastrous complications, if handled carelessly. Although various treatment modalities have been advocated in the literature, there seems to be no complete consensus on a suitable treatment in these cases. We describe a case of mandibular AVM, who presented with massive bleeding from mouth and each time, embolization of one vessel was done, it recruited new vessel.

Management

Right femoral artery approach was taken. Left common carotid artery was engaged with Right Judkin’s catheter. Then selective cannulation of right external carotid was done. Left facial artery was then engaged. Due to multiple branches and large nidus, micro catheter could not be selectively placed in the nidus. So facial artery was embolized with Amplatzer vascular plug (AVP) – (Figure 2). Next day bleeding again started. Check angio showed vascular plug in position but now the AVM was filling from right facial artery (Figure 3). Since coils or vascular plug was not available, it was embolized with PVA particles (Figure 4). Bleeding stopped and patient was discharged the next day. He again reported after one week with excessive bleeding from the same side of mouth. Check angio showed that the AVM had recruited feeders from maxillary artery (Figure 5). Also the right facial artery had recanalized. Next day, his left external carotid artery was embolized with AVP (Figure 6), as maxillary artery could not be approached due to the presence of a part of AVP in external carotid. His right facial artery was embolized with coils (Figure 7).

Introduction

Arteriovenous malformation (AVM) of the mandible is rare entity and difficult to manage. These often remain undiagnosed until dramatic bleeding occurs, mostly after tooth extraction. AVMs have a high propensity to bleed, which may be life threatening.

Case

19 years male presented with bleeding from mouth for one month. Bleeding occurred from left side of mouth. Bleeding was continuous. Patient had learnt to keep a cotton pack inside the mouth to control bleeding. There was no history of (H/O) trauma or tooth extraction. For the last one week, he had developed swelling on left side of lower lip.

There was no H/O bleeding from other sites. There was no H/O excessive bleeding after trauma. No H/O purpuric spots, ecchymotic spots or swelling of joints.

In the past history, he presented with excessive bleeding from mouth around 8 years back, after tooth extraction. Bleeding could not be controlled and he was then admitted in pediatrics department of our hospital. His bleeding could not be controlled and he was referred to Post-Graduate Institute of medical Education and Research (PGIMER), Chandigarh. There he was investigated for bleeding disorders, but all investigations were found to be normal. He was then subjected to carotid angiography and was found to have mandibular AVM.

Investigations:

- HB 7.4 Gm%
- Platelet count 1.3 lac /cmm
- Factor VIII 156%
- Factor IX 95.7%
- INR 1.0

Left external angiography: there was evidence of large AVM in mandibular region with feeders from left facial artery (Figure 1).
we were certain that bleeding will not recur. After shifting to the ward, we asked the patient to remove the cotton plug from the mouth. He was very reluctant to remove it. However on our persistence, he removed the plug and immediately, he bled profusely, till he again packed his mouth with cotton plug. His blood pressure fell to 70 mmHg (Systolic) and he was given I/V fluids and 2 units of blood transfusion. Next day we called oral surgeon. He insisted that he will examine the bleeding site after removing the cotton plug. And patient again had massive bleeding and only cotton plug controlled the bleeding. We again took the patient for check angiography. The culprit vessel was now right superior thyroid artery (Figure 8). This was embolized with PVA particles (Figure 9). Bleeding stopped. Patient was discharged after removing his cotton plug, after three days. Now it is over three years, and there is no recurrence of bleeding.

Discussion

The vascular malformations (VMs) can be categorized as low flow lesions (capillary, venous, lymphatic malformations) and high flow lesions (AVMs, arteriovenous fistulae) according to blood flow characteristics. AVMs are most common high flow lesions. Intraosseous VMs of the maxillofacial region sometimes give rise to dental emergencies and may cause disfigurement, morbidity and even death. A review of fatal cases by Lamberg and others shows that in most instances, exsanguination is the result of dental extractions, the dentist being unaware of existence of the AVM.

Numerous treatments in varying combinations and various degrees of success have been employed, including ligation, embolization, radical resection, use of sclerosing solutions, curettage and packing and radiation. Embolization followed by surgical treatment is still the modern conventional approach. Embolization reduces blood flow, allowing excision to be performed subsequently within 48 hours–2 weeks. Embolization is also not without risk as embolic complications, allergic reactions, avascular necrosis of bone, delayed root development, defective mandibular growth have been reported. Resection of mandible can result in a variety of disabilities including impairment of speech articulation, salivary control,
difficulty in swallowing, trismus and deviation of mandible toward the surgical side during functional movement.16

As seen in our case, a seemingly complete transarterial embolization does not guarantee complete occlusion of the AV-shunt surgery zone, and recruitment of new feeding vessels resulting in recurrence and rehemorrhage.16 For successful occlusion, the embolization should be done at or near the nidus, but due to the tortuous vessels, it may not always be achieved, as was the case with us.

References